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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/688,558	10/16/2000	Peter J. Anslow	537-1026	3391

7590 12/05/2003

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EXAMINER	
PHAN, HANH	

ART UNIT	PAPER NUMBER
2633	6

DATE MAILED: 12/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/688,558	ANSLOW ET AL.	
	Examiner	Art Unit	
	Hanh Phan	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Applicant's request for reconsideration of the Election/Restriction Office Action is persuasive and, therefore, the Election/Restriction Office Action is withdrawn.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the feature of the invention "**control circuitry for altering the decision threshold level for successive cycles of the measurement circuit**" specified in claims 1, 9 and 14 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 17 is objected to because of the following informalities: the limitations of claims 15 and 17 are the same. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 3-5 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Ransford et al (US Patent No. 6,532,087).

Regarding claim 1, referring to figures 2-4, Ransford discloses an apparatus for determining an error ratio of individual channels of a WDM optical signal, comprising:

a wavelength-selective filter (i.e., tunable band pass filter 410, Figs. 3 and 4) for separating the individual channels of the WDM signal (col. 10, lines 13-53);

a measurement circuit (i.e., Q detection module 350, Figs. 3 and 4) for measuring an error ratio of one channel using a first decision threshold level, the measurement circuit (Q detection module 350) being operable to cycle through all channels, taking an error ratio measurement for each channel in sequence

with a predetermined decision threshold level (col. 10, lines 4-67, col. 11, lines 1-22, col. 5, lines 40-67, col. 6, lines 12-25, and col. 9, lines 17-67); and

control circuitry (i.e., microprocessor 65, Fig. 2) for altering the decision threshold level for successive cycles of the measurement circuit (col. 6, lines 12-25).

Regarding claims 3 and 5, Ransford further teaches the measurement circuit (i.e. Q-detection module 350, Figs. 2-4) measures an error ratio by monitoring the channel with the applied decision threshold level for a predetermined time period, which time period is constant for all channels and for all decision threshold levels (col. 10, lines 4-59).

Regarding claim 4, referring to figures 2-4, Ransford discloses a method of determining the Q-factor of individual channels of a WDM optical signal, comprising the steps of:

separating the individual channels of the WDM signal (i.e., tunable band pass filter 410, Figs. 3 and 4, col. 10, lines 13-53);

measuring an error ratio of each channel in turn using a first decision threshold level (i.e., Q detection module 350, Figs. 3 and 4);

repeating the step for different decision threshold levels until measurement levels for all decision threshold levels have been obtained for each channel (col. 10, lines 4-67, col. 11, lines 1-22, col. 5, lines 40-67, col. 6, lines 12-25, and col. 9, lines 17-67).

Regarding claim 8, Ransford further teaches the error ratio is obtained by using a data structure embedded in the channel data (col. 6, lines 45-67 and col. 7, lines 1-15).

7. Claims 23-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Myers et al (US Patent No. 6,430,715).

Regarding claim 23, referring to figures 2 and 3, Myers discloses an apparatus for measuring the Q-value of an optical data, channel, comprising a clock extraction circuit (12)(Fig. 3) for deriving a clock signal at the data rate of the data channel, the clock signal being used by error measurement circuitry (i.e., decision circuit 18, error detection 20 and error counter 20C, Figs. 2 and 3) which measures a bit error ratio in the data, wherein the error ratio is used to obtaining a Q-value irrespectively of the data rate (col. 2, lines 8-55, col. 3, lines 55-67, col. 4, lines 1-52, from col. 5, line 64 to col. 6, lines 1-11).

Regarding claim 24, referring to figures 2 and 3, Myers discloses a node for an optical transmission network for transmitting an optical signal to carry data using a given data protocol, the node comprising measurement circuitry (i.e., decision circuit 18, error detection 20 and error counter 20C, Figs. 2 and 3) for monitoring a Q-value of the optical signal independently of the data protocol (see from col. 5, line 64 to col. 6, lines 1-11).

Regarding claim 25, referring to figures 2 and 3, Myers discloses a node for an optical transmission network for transmitting an optical signal to carry data using a given data rate, the node comprising measurement circuitry (i.e., error detection 20 and error counter 20C, Figs. 2 and 3) for monltoring a Q-value of the optical signal independently of the data rate (see from col. 5, line 64 to col. 6, lines 1-11).

8. Claims 19-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Ono et al (US Patent No. 5,896,392).

Regarding claim 19, referring to figures 1, 2 and 4, Ono discloses an apparatus for measuring the Q value of an optical data channel comprising a first decision circuit (i.e., sub-decision unit 6, Fig. 1) having a first, variable, decision threshold (i.e., decision voltage Vs, Fig. 2) and a second decision circuit (i.e., main decision unit 5, Fig. 1) having a second, constant, decision threshold (i.e., decision voltage Vm, Fig. 1), and an XOR element (i.e., EX-OR circuit 7, Fig. 1) which provides an output pulse when a different decision is made by the first and second decision threshold circuits, wherein the output pulses are used to determine the error ratio for different first decision thresholds, and wherein the apparatus further comprises extrapolation circuitry (i.e., counter 10 and controller 11, Fig. 1) for obtaining a Q-value from the error ratio values (col. 6, lines 3-67, col. 7, lines 1-37 and col. 8, lines 7-51).

Regarding claim 20, Ono further teaches a clock recovery circuit (i.e., clock recovery circuit 25, Fig. 2) for analyzing the optical data channel, the clock recovery circuit output being used to drive the decision circuits (Figs. 1 and 2).

Regarding claim 21, Ono further teaches the clock recovery circuit obtains the bit rate of the optical data channel, such that, the apparatus is bit rate independent (Figs. 1 and 2).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ransford et al (US Patent No. 6,532,087) in view of Couch (US Patent No. 4,475,210).

Regarding claim 7, Ransford teaches all the limitations of the claimed invention as set forth under the rejection in claim 4 above except fails to teach the error ratio is obtained by comparing the measured signal using the applied decision threshold with the measured signal using a default decision threshold. However, Couch teaches the error ratio is obtained by comparing the measured signal using the applied decision threshold (i.e., variable reference voltage, Fig. 4) with the measured signal using a default decision threshold (i.e., fixed reference voltage, Fig. 4, col. 2, lines 45-64). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the error ratio is obtained by comparing the measured signal using the applied decision threshold with the measured signal using a default decision threshold as taught by Couch in the system of Ransford. One of ordinary skill in the art would have been motivated to do this since Couch suggests in column 2, lines 45-64 that using such the error ratio is obtained by comparing the measured signal using the applied decision threshold with the measured signal using a

default decision threshold have advantage of allowing the estimation of Q value accurately and providing an evaluation of received signal quality.

11. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ransford et al (US Patent No. 6,532,087) in view of Takeshita et al (US Patent No. 6,538,779).

Regarding claims 2 and 6, Ransford teaches all the limitations of the claimed invention as set forth under the rejection in claims 1 and 4 above except fails to teach an error warning indicator which provides an error warning when a measured error ratio exceeds the expected error ratio for the particular decision threshold being applied by a predetermined amount. However, Takeshita teaches an error warning indicator which provides an error warning when a measured error ratio exceeds the expected error ratio for the particular decision threshold being applied by a predetermined amount (Figs. 2 and 3, col. 2, lines 35-44, col. 4, lines 30-67 and col. 5, lines 1-32). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the error warning indicator which provides an error warning when a measured error ratio exceeds the expected error ratio for the particular decision threshold being applied by a predetermined amount as taught by Takeshita in the system of Ransford. One of ordinary skill in the art would have been motivated to do this since Takeshita suggests in column 2, lines 35-44, col. 4, lines 30-67 and col. 5, lines 1-32 that using such the error warning indicator which provides an error warning when a measured error ratio exceeds the expected error ratio for the particular decision

threshold being applied by a predetermined amount have advantage of allowing monitoring the quality of the light signal and evaluation of received signal quality.

12. Claims 9, 11-15, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ransford et al (US Patent No. 6,532,087) in view of Chaudhuri et al (US Patent No. 6,587,235).

Regarding claims 9 and 14, referring to figures 2-4, Ransford discloses a WDM optical communication network comprising a plurality of nodes wherein the output path or paths of one or more nodes are provided with an apparatus for determining an error ratio of individual channels of a WDM optical signal, comprising:

a wavelength-selective filter (i.e., tunable band pass filter 410, Figs. 3 and 4) for separating the individual channels of the WDM signal (col. 10, lines 13-53);

a measurement circuit (i.e., Q detection module 350, Figs. 3 and 4) for measuring an error ratio of one channel using a first decision threshold level, the measurement circuit (Q detection module 350) being operable to cycle through all channels, taking an error ratio measurement for each channel in sequence with a predetermined decision threshold level (col. 10, lines 4-67, col. 11, lines 1-22, col. 5, lines 40-67, col. 6, lines 12-25, and col. 9, lines 17-67); and

control circuitry (i.e., microprocessor 65, Fig. 2) for altering the decision threshold level for successive cycles of the measurement circuit (col. 6, lines 12-25).

Ransford differs from claims 9 and 14 in that he fails to teach each node comprising an optical switching arrangement for performing routing of signals across the

network. However, Chaudhuri teaches each node comprising an optical switching arrangement for performing routing of signals across the network (Figs. 5 and 6, from col. 5, line 12 to col. 7, line 55). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the each node comprising an optical switching arrangement for performing routing of signals across the network as taught by Chaudhuri in the system of Ransford. One of ordinary skill in the art would have been motivated to do this since Chaudhuri suggests in column 5, lines 12-67, col. 6, lines 1-67 and col. 7, lines 1-35 that using such each node comprising an optical switching arrangement for performing routing of signals across the network has advantage of allowing distributing the signals from the central office to the user terminals.

Regarding claims 11, 15 and 17, Ransford further teaches the measurement circuit (i.e. Q-detection module 350, Figs. 2-4) measures an error ratio by monitoring the channel with the applied decision threshold level for a predetermined time period, which time period is constant for all channels and for all decision threshold levels (col. 10, lines 4-59).

Regarding claim 12, Ransford further teaches wherein each node is further provided with an apparatus (i.e., Q detection module 350, Figs. 3 and 4) for determining an error ratio.

Regarding claim 13, Ransford further teaches wherein each node is further provided with optical spectrum analyzer (i.e., second O-E converter 30, microprocessor

65, fourth O-E converter 40, Fig. 2, col. 5, lines 42-67, col. 7, lines 64-67 and col. 8, lines 1-34).

Regarding claim 18, referring to figures 2-4, Ransford discloses a WDM optical communications network comprising a plurality of nodes and a plurality of amplifiers between the nodes wherein each node is provided with an apparatus (i.e., Q detection module 350, Figs. 3 and 4) for determining the Q-factor of individual channels of the WDM optical signal, and wherein each optical amplifier (i.e., EDFA AMP 20, Fig. 2) is provided with optical spectrum analysis apparatus (i.e., second O-E converter 30, microprocessor 65, fourth O-E converter 40, Fig. 2, col. 5, lines 42-67, col. 7, lines 64-67 and col. 8, lines 1-34).

Ransford differs from claim 18 in that he fails to teach each node comprising an optical switching arrangement for performing routing of signals across the network. However, Chaudhuri teaches each node comprising an optical switching arrangement for performing routing of signals across the network (Figs. 5 and 6, from col. 5, line 12 to col. 7, line 55). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the each node comprising an optical switching arrangement for performing routing of signals across the network as taught by Chaudhuri in the system of Ransford. One of ordinary skill in the art would have been motivated to do this since Chaudhuri suggests in column 5, lines 12-67, col. 6, lines 1-67 and col. 7, lines 1-35 that using such each node comprising an optical switching arrangement for performing routing of signals across the network has advantage of allowing distributing the signals from the central office to the user terminals.

13. Claims 10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ransford et al (US Patent No. 6,532,087) in view of Chaudhuri et al (US Patent No. 6,587,235) and further in view of Takeshita et al (US Patent No. 6,538,779).

Regarding claims 10 and 16, Ransford as modified by Chaudhuri teaches all the limitations of the claimed invention as set forth under the rejection in claim 9 above except fails to teach an error warning indicator which provides an error warning when a measured error ratio exceeds the expected error ratio for the particular decision threshold being applied by a predetermined amount. However, Takeshita teaches an error warning indicator which provides an error warning when a measured error ratio exceeds the expected error ratio for the particular decision threshold being applied by a predetermined amount (Figs. 2 and 3, col. 2, lines 35-44, col. 4, lines 30-67 and col. 5, lines 1-32). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the error warning indicator which provides an error warning when a measured error ratio exceeds the expected error ratio for the particular decision threshold being applied by a predetermined amount as taught by Takeshita in the system of Ransford modified by Chaudhuri. One of ordinary skill in the art would have been motivated to do this since Takeshita suggests in column 2, lines 35-44, col. 4, lines 30-67 and col. 5, lines 1-32 that using such the error warning indicator which provides an error warning when a measured error ratio exceeds the expected error ratio for the particular decision threshold being applied by a predetermined amount have advantage of allowing monitoring the quality of the light signal and evaluation of received signal quality.

14. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshita et al (US Patent No. 6,538,779) in view of Couch (US Patent No. 4,475,210).

Regarding claim 19, referring to figures 2-4, Takeshita discloses an apparatus (i.e., signal quality monitor 201, Fig. 2) for measuring the Q value of an optical data channel comprising a first decision circuit (204) having a first decision threshold (i.e., a first decision threshold V1, Fig. 2) and a second decision circuit (205) having a second decision threshold (i.e., a second decision threshold V2, Fig. 2), and an XOR element (i.e., EX-OR 206, Fig. 2) which provides an output pulse when a different decision is made by the first and second decision threshold circuits (204, 205), wherein the output pulses are used to determine the error ratio for different first decision thresholds, and wherein the apparatus further comprises extrapolation circuitry (i.e., error counter 207, Fig. 2) for obtaining a Q-value from the error ratio values (col. 4, lines 30-67, col. 5, lines 1-56, col. 7, lines 52-67 and col. 8, lines 1-53).

Takeshita differs from claim 19 in that he fails to teach the first decision threshold is variable and the second decision threshold is constant. However, Couch teaches the first decision threshold is variable (i.e., variable reference voltage, Fig. 4) and the second decision threshold is constant (i.e., fixed reference voltage, Fig. 4, col. 2, lines 45-64). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the error ratio is obtained by comparing the measured signal using the applied decision threshold with the measured signal using a default decision threshold as taught by Couch in the system of Takeshita. One of ordinary skill in the art would have been motivated to do this since Couch suggests in

column 2, lines 45-64 that using such the error ratio is obtained by comparing the measured signal using the applied decision threshold with the measured signal using a default decision threshold have advantage of allowing the estimation of Q value accurately and providing an evaluation of received signal quality.

Regarding claim 20, Takeshita further teaches a clock recovery circuit (i.e., clock recovery circuits 204.2 and 205.2, Fig. 2) for analyzing the optical data channel, the clock recovery circuit output being used to drive the decision circuits (204. 1 and 205.1)(Fig. 2).

Regarding claim 21, Takeshita further teaches the clock recovery circuit obtains the bit rate of the optical data channel, such that, the apparatus is bit rate independent (Fig. 2).

15. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Myers et al (US Patent No. 6,430,715) in view of Couch (US Patent No. 4,475,210).

Regarding claim 19, referring to figures 2, 3 and 5, Myers discloses a method of determining the Q-value of an optical data channel, comprising the steps of:

measuring an error ratio using a first decision threshold level by comparing the measured signal using the first decision threshold with the measured signal using a second decision threshold, such that the error ratio measurement is independent of the protocol of the data channel (Fig. 3, col. 2, lines 8-55);

repeating the step for different values of the first decision threshold level (Fig. 3); and

deriving the Q-value from the error ratio values (Fig. 3, col. 3, lines 55-67 and col. 4, lines 1-52).

Myers differs from claim 19 in that he fails to teach the first decision threshold is variable and the second decision threshold is constant. However, Couch teaches the first decision threshold is variable (i.e., variable reference voltage, Fig. 4) and the second decision threshold is constant (i.e., fixed reference voltage, Fig. 4, col. 2, lines 45-64). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the error ratio is obtained by comparing the measured signal using the applied decision threshold with the measured signal using a default decision threshold as taught by Couch in the system of Myers. One of ordinary skill in the art would have been motivated to do this since Couch suggests in column 2, lines 45-64 that using such the error ratio is obtained by comparing the measured signal using the applied decision threshold with the measured signal using a default decision threshold have advantage of allowing the estimation of Q value accurately and providing an evaluation of received signal quality.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

McCormack et al (US Patent No. 6,463,109) discloses multichannel adaptive data recovery system.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (703)306-5840.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (703)305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

Hanh Phan

11/25/2003